REMARKS

Claims 1-44 are presented for consideration, with claims 1, 15, 31, 41 and 42 being independent.

Editorial changes have been made to selected claims, and Claims 43 and 44 have been added to provide an additional scope of protection. In addition, the specification has been amended to provide reference to a demodulating device which has been added to the drawings.

In that regard, applicant is submitting concurrently herewith a Submission of Replacement Sheet of Drawing, showing Figure 3 to include a demodulator 10. Support for the demodulator is provided, for example, on page 10, lines 14-17, of the specification. Approval of the Replacement Sheet is respectfully requested.

Initially, the drawings were objected to for the reasons set forth on page 2 of the Office Action. In response to this objection, Figure 3 has been amended to include a demodulator. With respect to the objection as applied to claim 1, line 8, it is respectfully submitted that a "symbol sampling timing" is subject matter that can be readily understood without illustration.

Selected claims were objected to because of minor informalities identified on pages 3 and 4 of the Office Action. These informalities were taken into consideration when amending the claims. It is respectfully submitted, however, that several of the claims identified as containing informalities were not amended because to do so would change the scope of applicant's invention. For example, use of the word "would" in claim 1 is maintained because it conveys one important feature of applicant's invention, i.e., the determining device determines if

a fractional sample delay added to a demodulator's symbol sampling timing would improve synchronization timing, and if so, a fractional sample delay is calculated.

Claims 1-42 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Particular attention was paid to the grounds for this rejection as set forth on pages 4-7 of the Office Action in amending the claims as shown above. With respect specifically to claim 1, it is submitted that the "correlation values" are produced by signal samples received by a receiver with a reference training signal (see page 10, lines 7-10). Additionally, the claims have been amended to provide throughout a "fractional sample delay," a "required fractional sample delay" and a "calculated fractional sample delay." Still further, it is respectfully submitted, as discussed above, that use of the word "would" does not render the claims indefinite, as it sets forth a condition of determining if a fractional sample delay added to a demodulator's symbol sampling timing would improve synchronization. Accordingly, it is respectfully submitted that all of the claims are in compliance with the particularity and distinctness requirements of the statute. Therefore, reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. §112, second paragraph, is respectfully requested.

Claims 1, 2, 10, 15, 16, 24, 29, 41 and 42 stand rejected under 35 U.S.C. §103 as allegedly being obvious over Citta '619 in view of Krasner '291. Claims 3-7, 11, 17-21 and 25 are rejected as allegedly being obvious over Citta, Krasner and Beauvais '775. In addition, claims 8, 9, 12, 13, 14, 22, 23, 26, 28, 33-37 and 39 are rejected as allegedly being obvious over Citta in view of Krasner and further in view of either Knutson '369 (claims 8, 9, 22, 23 and 30), Beauvais and Broekhoven '842 (claims 12, 13, 26 and 27), Nishida '939 (claims 14 and 28), or Broekhoven and Beauvais (claims 33-37 and 39). Finally, claims 31, 32, 38 and 40 are rejected

as allegedly being obvious over Citta in view of Krasner (not Knutson) and Broekhoven. These rejections are respectfully traversed.

Claim 1 of applicant's invention relates to a demodulator for demodulating digital data, comprising a receiver circuit for receiving a digital data signal, a correlator to correlate the digital data signal received from the receiver circuit with a reference training sequence to produce a correlation value, and a verification unit to select correlation values above a threshold value. In addition, a determining device determines if a fractional sample delay added to a demodulator's symbol sampling timing would improve synchronization timing and calculates a required fractional sample delay to improve synchronization, and an implementing device implements the calculated fractional sample delay if the determining device determines that a fractional sample delay would improve the demodulation synchronization timing. A demodulating device demodulates the digital data signal.

Claims 15 and 31 relate to a method for demodulating digital data and a computer executable code for implementing such a method, respectively, and correspond substantially to claim 1. These claims thus also correlate the received digital data signal with a reference training signal to produce a correlation value, select correlation values above a threshold value, and determine if a fractional sample delay added to a demodulator's symbol sampling timing would improve synchronization timing and calculate a required fractional sample delay to improve synchronization.

Claim 41 relates to a method for demodulating digital data and includes the steps of receiving a digital data signal, correlating the received digital data signal with a reference training sequence to produce a correlation value, and selecting correlation values above a threshold value. An amount of fractional sample delay to be added to a demodulator's symbol

sampling timing is determined based on the selected correlation values, the fractional sample delay is implemented, and the digital data signal is demodulated.

Claim 42 relates to a demodulator for demodulating digital data and corresponds substantially to claim 41.

The primary citation to Citta relates to a receiver synchronizer for use in a data communication system. As shown in Figure 5, a receiver 14 includes a demodulator 40, an A/D converter 42, filter 44, and a synchronizer 46. The synchronizer 46 includes a detector 60 which correlates a signal received by the receiver with reference up and down chirps having a waveform which substantially matches the waveform of pilot up and down chirps provided by a transmitter 12 (see Figure 7, column 5, line 19, et. seq. of the specification).

In contrast to applicant's claimed invention, however, it is respectfully submitted that Citta does not teach or suggest, among other features, correlating the received digital data signal with a reference training sequence to produce a correlation value, and calculating (or determining) a fractional sample delay. On these points, it is respectfully submitted that pilot up and down chirps contained in the received signal are different from a reference training sequence. As understood, the up and down chirps are a continuously fed signal (column 4, lines 48-51) added at 12 db down (as an example) from transmitted code vectors (column 4, lines 51-53), thus creating a "buzz." It is submitted that this constant, low-level noise transmission does not constitute a reference training sequence as provided in Applicant's claims. Still further, Citta does not teach or suggest determining if a fractional sample delay added to a demodulator's symbol sampling timing would improve synchronization and calculate a required fractional sample delay to improve synchronization as in claims 1 and 15. Instead, Citta is

merely understood to use a fractional delay filter 314 as part of a delay block 68 provided within the synchronizer 46.

The Office Action acknowledges that Citta does not specify a threshold value for select correlation values, but compensates for this deficiency by citing Krasner. The patent to Krasner relates to a noise correlation system and is relied upon for detecting a correlation peak using a threshold.

It is respectfully submitted, however, that Krasner fails to compensate for the deficiencies in Citta as discussed above with respect to applicant's independent claims. Therefore, without conceding the propriety of combining Citta and Krasner in the manner proposed in the Office Action, it is respectfully submitted that such a combination fails to teach or suggest several features of applicant's claimed invention, as discussed above. Accordingly, reconsideration and withdrawal of the rejection of claims 1, 2, 10, 15, 16, 24, 29, 41 and 42 under 35 U.S.C. §103 is respectfully requested.

With respect to independent claim 31, the tertiary citation to Broekhoven was cited for its teaching of a computer readable medium for storing computer executable code. Without conceding the propriety of combining Citta, Krasner[1] and Broekhoven as proposed in the Office Action, such a combination still fails to teach or suggest applicant's claimed invention for the reasons discussed above with respect to claim 1 and 15.

The remaining tertiary citations also fail to compensate for the deficiencies in the proposed combination of Citta and Krasner. In this regard, Beauvais was cited for its teaching of using a correlation curve to determine a fractional sample delay, Knutson was relied

---

[1] Paragraph 12 of the Office Action (page 15) cites Knutson but applies Krasner.

upon for teaching a fractional sample delay in a specified range, and Nishida was relied upon for teaching a VDL receiver.

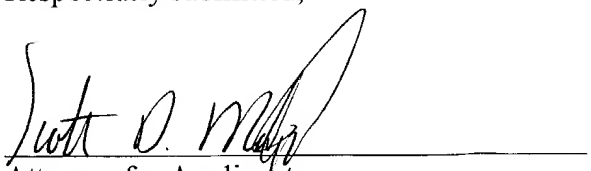
Nonetheless, without conceding the propriety of combining the art in the various combinations as proposed in the Office Action, such combinations still fail to teach or suggest applicant's claimed invention. Therefore, reconsideration and withdrawal of the remaining rejections under 35 U.S.C. §103 is respectfully requested.

Accordingly, it is submitted that applicant's invention as set forth in independent claims 1, 15, 31, 41 and 42 is patentable over the cited art. In addition, dependent claims 2-14, 16-30, 32-40, 43 and 44 set forth additional features of applicant's invention. For example, Claims 43 and 44 provide additional details of the reference training sequence. Independent consideration of the dependent claims is respectfully requested.

In view of the foregoing, reconsideration and allowance of this application is deemed to be in order and such action is respectfully requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to Honeywell's address given below.

Respectfully submitted,



Attorney for Applicant
Scott D. Malpede
Registration No. 32,533

HONEYWELL INTERNATIONAL INC.
Law Department
101 Columbia Road
P.O. Box 2245
Morristown, New Jersey 07962-2245
SDM\rnm
DC_MAIN 183669v1